# The Use of LSD as an Adjuvant to Psychotherapy. Fact and Fiction

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In spite of the present furor against the use of LSD as an adjuvant to psychotherapy, I feel now, as I did nearly two decades ago, that LSD administered in low doses (less that 150 micrograms) not only is harmless when employed in a suitable medical therapeutic procedure, but also is of value in the psychotherapeutic process (1).

Although present day research projects in pharmacology and psychiatry do not encompass the study of the effects of LSD, to the extent that was found previously, the importance of the discovery of its psychotomimetic effect by Hofmann still is, in the view of the writer, of the greatest importance, both scientifically and psychotherapeutically. In support of this is the fact that more than 3000 papers on LSD, its derivatives and congeners have been published in the past three decades. Why has this group of compounds become quantitatively much less important in the present

often fruitless search for understanding of the nature of the psychotic process? Before discussing the origins of the present low point in emphasis on LSD research, it is important to understand the nature of the drug both to the individual and to society, in general.

Dahlberg and his coworkers (2) have published a report entitled "LSD Research: The Impact of Lay Publicity." They emphasize that there has been continuous concern for the political, social, and psychoanalytical implications. Drugs like LSD, of course, have been receiving sensational and unfavorable attention not only from the press, but also from certain physicians, whose anxieties take precedence over their understanding that research should continue with LSD. The illegal street use of LSD has increased as research has decreased. In this writer's own experience, it took approximately three years to obtain legal permission to continue early studies of LSD on goldfish (3).

The origins of the difficulties may in part be traced as follows. From 1951 until 1962 world-wide research on LSD resulted in publication of more than 1000 papers. However, difficulties at Harvard University in 1962 resulted in unfavorable publicity in newspapers and magazines. "Authoritative" articles appeared, too frequently authored by those who had had no direct experience with the drug or who dealt primarily with the results of unknown drug mixtures purchased on the street. Press coverage usually did not cover the professionally written articles unless the data stressed the dangers connected with LSD use. Most of the coverage in the press pertained to the results of the uses of LSD obtained through illicit channels. Further, it was rarely validated by the press that LSD was really or uniquely involved. Usually, careful analysis of the patient's history showed that an ongoing psychotic process was amplified by an assortment of illicitly obtained drugs, the nature of which could not be identified. Dahlberg and his colleagues succinctly state:

"After this period there was very little publicity until March 1966, when *Life Magazine* renewed the notoriety by publishing an article with considerable sensationalistic emphasis. Shortly thereafter, newspaper, magazine, radio, and television coverage abounded -- lurid reports of a child accidentally swallowing the drug, a murder connected with LSD, inquiries by a district attorney, etc. Recall of the drug by Sandoz followed. The New York County Medical Society made formal recommendations to the State legislature asking for more stringent penalties for illicit manufacture and distribution of the drug, which was followed in April 1967 by the enactment in New York State of laws controlling the sale, possession, and use of hallucinogens."

The pioneering research of Bender, Goldschmidt and Sankar (4,5) using both LSD and Sansert on autistic children showed that the use of these drugs was without deleterious effects.

Irwin and Egozcue, on the contrary (see 6), stated that there was an increase in chromosomal breakage in six out of eight volunteers who had taken LSD compared to one out of nine volunteers who had never taken the drug before. This statement, of course, is not only of importance in connection with LSD but also of great importance in connection with the use of Sansert in the treatment of migraine. Sansert, which is in worldwide use today, is chemically speaking, very closely related to LSD. The dosage of Sansert is very much larger than LSD. Compare, for example, a 200 microgram dose of LSD with a 2000 microgram dose of Sansert taken three times daily over a period of years. No damage to chromosomes has been reported where Sansert has been used for years. Bender and Sankar report, contrary to the implied conclusions of Irwin and Egozcue, that chromosomal damage was not found in the leucocytes of children treated with LSD. Their negative findings are most significant because these children received up to 150 micrograms of pure LSD daily for as long as two and three years in contrast with

the studies of illicit users reported by Irwin and Egozcue who almost invariably use other drugs as well.

In keeping with this finding of Bender and Sankar is the report of Warkany and Takacs (7). These investigators administered LSD in doses up to 300 micrograms to 55 pregnant rats during a period of organogenesis. Examination of the resultant 887 young for congenital effects showed no greater frequency than in controls. These experiments fail to prove that LSD is teratogenic in rats. Previous work by other authors such as Alexander *et al.* were not confirmed. Again, I wish to emphasize that conclusions about LSD must be paralleled by studies of other lysergic acid derivatives so commonly employed in medicine. In the United States LSD and other lysergic acid derivatives have assumed almost mystical significance in their ability to produce permanent psychologic catastrophies. One might almost think it was left here by Orson Welles' Martians when they invaded the earth rather than given us by the brilliant discovery of the Swiss chemist, Hofmann.

If the results of Bender and her colleagues had shown that the children were damaged by LSD, undoubtedly magazines from *Playboy* to *House and Garden* would have reported it. Apparently, the press generally ignored papers indicating that research supported the use of LSD for one medical reason or another. For example, the recent paper by McGlothlin and Arnold (8), "LSD Revisited, A Ten-Year Follow-up of Medical LSD Use" in *Archives of General Psychiatry* (1971), was essentially neglected by the press because of his favorable report summarized here:

"A follow-up survey of 247 persons who received d-lysergic acid diethylamide (LSD) in either an experimental (nonmedical) or psychotherapeutic setting was made to determine the lasting effects, if any, related to use of the drug. Information was collected from each by a structured interview and self-administered questionnaire. Some subsequent nonmedical use of LSD was reported by 23%, who

attributed more personality changes to the drug's use. There is, however, little evidence, that measurable, lasting personality, belief, value, attitude, or behavior changes were produced in the sample as a whole. Compulsive patterns of LSD use rarely developed; the nature of the drug effect apparently is such that it becomes less attractive with continued use and, in the long-term, is almost always self-limiting."

The scare and alarmist tactics in the present vain battle against drug abuse have been employed extensively to curb the use of LSD. Thus, Wagner, in the June 1969 issue of *Nature* states, according to *Science News, 100,* (1969) p. 74:

"In June of 1969 *Nature* published a paper by Wagner, then of the Sloan-Kettering Institute for Cancer Research. 'The observation of broken chromosomes in test animals and humans treated with the hallucinogen (LSD) has been well documented' the paper began. Dr. Wagner then went on to announce that using a spectropolarimeter, he had discovered evidence indicating 'that LSD interacts directly with a purified calf thymus DNA, probably by intercalation, causing conformational changes in the DNA.' This meant that LSD comes between the DNA bases and interacts strongly at the gene level, unwinding the helix and causing mutations and changes in DNA activity. In other words, the LSD-DNA interaction is responsible for physical changes in the chromosomes, defective genes and possible mutations".

However, *Science News* of July 16, states:

"The July 16, *Nature* contains two papers that refute those findings. Drs. Smit and Borst of the University of Amsterdam state that, using a more specific and sensitive method for studying intercalation, no interaction between DNA and LSD was detectable. They therefore conclude that 'chromosome damage in the presence of LSD is not a consequence of the intercalation of LSD and DNA.'".

Again, I am indebted to *Science News* (July 16,) which reports that Wagner's data are open to question.

"Drs. Brade, Brady and Boucek of the University of Miami School of Medicine report similar findings based on completely different methods. And their experiments 'have failed to show that LSD has any effect on DNA conformation.' Dr. Brady says there 'may be some kind of interaction but if there is, it is very minimal and does not show up as any change in optical activity.' And 'if LSD is responsible for any kind of mutant action it is not by direct interaction with the DNA molecule.' The University of Miami researchers were unable to find any optical activity changes when DNA and LSD were mixed and they could not repeat or confirm Dr. Wagner's spectra. Dr. Brady says that their experiments, the evidence of Drs. Smit and Borst and mounting physical and chemical evidence are beginning to refute evidence that we might have been inclined to believe a year ago."

Although the street use of LSD decreased when the threat of genetic injury was first reported and accepted, accurate interpretation of the available data was not widespread. If an educative program designed to decrease the use of a drug is not accurate, harmful drug experiences have not been, and will not be, prevented. The drug prevention programs organized by Washington have certainly prevented this writer from continuing a program based on fifteen years of experience with LSD, its derivatives and congeners. But as mentioned, the illicit use of LSD and especially readily available hallucinogens are probably increasing. The dissemination of blatant misinformation, combined with the shackling of medical research, has led to failure of the efforts to control drug abuse, as far as LSD is concerned.

What is LSD? How is it related to drugs in common use? LSD is a derivative of d-lysergic acid. Lysergic acid itself is the basis of many ergot compounds used daily in

medicine. But LSD has a unique property which differentiates it from all other drugs. Even in extremely small doses, LSD produces a disturbance in mentation, in perception of sound, light and color, in emotional reaction, in ideation. This disturbance is always, in reasonably low doses, reversible if the dose, set (attitude of the observer), setting and personality of the subject or patient are suitable. It may be mentioned that these criteria apply to all mind influencing drugs, e.g., prednisone, a euphoria producing corticosteroid commonly used in asthma, arthritis and other conditions. After a certain number of hours, the effect of LSD itself wears off.

Contrary to assertions in the popular press, when LSD is administered in suitable dosage as part of a therapeutic medical program, "irreversible psychotic changes" and "brain damage" do not occur. Certain irresponsible statements that it does produce such adverse effects have not been supported by valid scientific evidence. Perhaps the irresponsible reports reflect the anxieties of journalists and scientists regarding psychological disturbances rather than a valid assessment of all the data available.

In many people the effect of LSD in high dosages resembles a psychotic state. The reason for this is that LSD creates an emotional storm during which a person frequently is able to recall forgotten or repressed events and early experience. Outwardly, it may seem that the person is psychotic. Actually he may undergo a complete reevaluation of his self-image.

LSD, if taken without proper supervision and under undesirable circumstances, can produce a reaction in unstable people which presents an alarming appearance and can lead to dangerous behavior. Like any other drug, LSD belongs in the hands of responsible medical authorities. In responsible hands, LSD is, I believe, a valuable tool in hastening successful results in psychotherapy, especially psychoanalytic or psychoanalytically oriented psychotherapy.

How small is a small therapeutic dose of LSD? The dose of LSD is administered in *micrograms* (mcg). There are 300,000 mcg of aspirin in the ordinary tablet. We now may ask how many mcg of LSD are needed for the drug to make itself felt? The first, or threshold dose, may be about 25 mcg. Under desirable conditions a dose of about 100 mcg produces a dramatic reaction, often *resembling* a psychotic state. I use the term desirable because, if the setting in which LSD is given to the patient seems threatening, the reaction may be distressing to the patient and frightening to the people with him.

If 100 mcg of LSD is administered to a group of so-called normal subjects, each member of the group will react differently, according to his personality structure and to the setting, or milieu, in which the drug is given. The attitude of the physician who administers the drug exerts a significant influence. An anxious physician inevitably produces an anxious subject. The disagreements about, and opposition to, LSD therapy voiced by inexperienced or anxious investigators can easily be understood when seen in the context of these complicated variables.

In the results of experiments published more than fifteen years ago, my coworkers and I found that symptoms frequently reported by fourteen non-psychotic subjects who received LSD included memory difficulties, mood changes and difficulty in concentration. Feelings of unsteadiness, inner trembling and dizziness were reported, as well as peculiar sensations in the hands, the feet and on the skin: dream-like feelings were common, as were heaviness in the hands and feet, drowsiness, and difficulty in focusing vision. Anxiety occurred often. Depersonalization was observed. There were occasional paranoid reactions. Some reported a peculiar sensation of the lips being drawn back, as in an involuntary smile. With dosages of 100 mcg, hallucinations were rarely reported. In psychoanalytic therapy, the dosage rarely exceeded 100 mcg. Higher doses were given

if the patient was hospitalized overnight with the treatment, psychoanalytically oriented, taking place in a hospital.

In spite of the complicated symptoms and signs produced by LSD even when given in a suitable setting, the drug's action leads to an extraordinary and somewhat paradoxical integrative process in the patient's psyche, because of the nature of his relationship with the therapist. The unpleasant and peculiar storm taking place in the nervous system is accompanied by a remarkable state of ego enhancement occurring simultaneously with ego depression. During this period of the LSD reaction, the therapist may manipulate this dual change in ego. The ego enhancement produced may be employed by the therapist for the benefit of the patient. In other words, the patient reacts to the LSD and to the therapist, not to the LSD alone. Some of the characteristics of the therapeutic process may include intense awareness of the treatment period with good memory of the experience; increased fantasy; limited regressive ideation; facilitated interpretation of symbolic processes; acute awareness of the need to maintain conscious control of self; mounting anxiety; difficulties in the struggle to control feelings; fluctuating depression and euphoria; fluctuating disturbances in perception; rare hallucinatory episodes, almost always accompanied by simultaneous awareness of reality and by mild sexual stimulation. The therapist himself must be relatively free of anxiety if he is to be successful in treating the patient who is undergoing this multifaceted psychic upheaval.

What compounds related to LSD are commonly used in medicine? These are familiar drugs: Ergonovine Maleate, Methyl Ergonovine Tartrate, Ergotamine Tartrate as well as Methysergide. Crude extracts of ergot were used by midwives as far back as the seventeenth century for its effect on the uterus. Other plant extracts have been employed for more than 3,000 years for their effects on the mind, usually in connection with ritualistic, religious and

success with this form of treatment than with routine clinic treatment. Seventy-four male parolees comprised the study sample and were randomly assigned to psychedelic drug therapy or routine clinic treatment.

Treatment for a control group included weekly group therapy, parole supervision, and urine monitoring. The treatment for the experimental group consisted of intensive preparatory interviews and a day-long session with a high dose of LSD. Abreaction, catharsis and reliving of past memories all may occur, but the process is in many respects nonverbal. The patient may spend a good part of his day listening to music. During their entire treatment the patients lived at a halfway house. Daily monitoring of urine for narcotic drugs was routine. The patients' usual length of stay was five weeks to two months. They received 24 hours of intensive therapy culminating in one high-dose (300-450 mcg) LSD session. After the session, each patient received an added week of therapy.

In terms of the simple variable of abstinence, after one year 24% of the treatment group maintained total abstinence from narcotic drugs, vs. 5% of the control group. This difference was significant at the 0.05 level of confidence.

The reader will find considerable controversy concerning the use of statistical methods when evaluating the results of psychotherapy with LSD and similar drugs. The double-blind experiment is one that is arranged with two groups of patients who are simultaneously treated. Neither patient nor doctor knows which group has received LSD, and which group has been given another drug, or some harmless substance. It should seem fairly obvious that it would be unlikely for a patient who had been given a placebo, or sugar pill, to believe that he had taken LSD. It is true that when studying the effect of the drug on the human organism, the investigator should endeavor to be uninfluenced by his own expectations. The therapeutic nihilist rarely acknowledges the value of a drug. The enthusiastic

therapist hopefully searches for a positive result. To minimize the anticipations of both nihilist and enthusiast, the double-blind type of experimental procedure in clinical trials has been widely adopted. The procedure and its results depend upon statistics. Personal bias is supposed to be eliminated. The method involves either a suitably large sample of subjects or special mathematical assumptions if the sample is small.

The effects of drugs which are of importance to research in psychopharmacology can hardly be studied by the double-blind technique alone. Certainly, whenever the psyche is involved, at least equal weight must be given to the intensive study of drug effects in a single patient exemplified by the method in this study. It is difficult to understand how the result of extensive study, based on patient group averages, rather than on individuals, can have direct implications with respect to improvement in the psychotherapy of patients. Judgments regarding indications for treatment derived from the single case study may be more meaningful than those derived from a large, vague sample with inherent patient complexities of the sample. The psyche is always involved, whether we like it or not! It is important to emphasize that statistics developed from systematic observations of a single patient under treatment may be more useful than statistics concerning a somewhat scrambled patient population. Only by direct clinical observations or clinical judgment can we really learn about the patient (11). This must be the primary focal point of many hypotheses, and it is such observations which may provide a proper basis for subsequent clinical research by statistical analysis.

Both clinical judgment and the double-blind method are important. However, the intensive study of the patient as illustrated in previous volumes by the writer must be continued by the practicing physician. No rigid governmental or academic agency will ever take the place of the clinical

judgment of the practicing physician. And this is especially true in psychotherapy.

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